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No. 32987/49.

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SPECIFICATION NO. 682196

INVENTOR:- ONISSIH BURANOV

By a direction given under Section 17(1) of the Patents Act 1949 this application proceeded in the name of The Renold and Coventry Chain Company Limited, a British Company, of Renold Works, Didsbury, Manchester.

THE PATENT OFFICE,  
4th October, 1952

DB 35818/1(19)/3300 150 9/52 R

circumferential surfaces on both and either the hub or the rim or each has  
20 a flange covering a face of the ring and extending into contact with the rim or hub as the case may be so as to maintain them concentric with one another.

The rubber or the like permits relative  
25 rotary displacement of the hub and rim. If the chain wheel is transmitting any considerable power the tension in the chain tends to displace the rim radially relatively to the hub and if this is permitted  
30 to occur the chain may run unevenly. The flange or flanges resist this tendency.

Preferably either the hub or rim or both is or are recessed to form an internal  
35 annular cavity in the wheel while leaving cylindrical surfaces in running contact with one another at each face, and then the rubber ring lies in the annular cavity and is bonded to the two concentric cylindrical surfaces bounding it.

Examples of chain wheels constructed according to the present invention are shown in the accompanying drawings in which:—

45 Figures 1 and 2, 3 and 4, and 5 and 6 are radial sections and fragmentary elevations of three different wheels.

In the construction shown in Figures 1 and 2 a narrow rubber ring 12 is used,

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Figures 5 and 6 show a construction in which the hub 36 and rim 38 have wavy  
70 opposed surfaces 40 and 42 to which is bonded a rubber ring 44. Relative radial displacement of the hub and rim is prevented by a single deep flange 46.

One or more wheels or sprockets accord-  
75 ing to the present invention may be used in a set of wheels run over by a single chain. They are of most value on the shafts or the like which are subject to most uneven torque or speed. The flexible  
80 parts serve to reduce irregularity in the load transmitted by the chain and so to prolong the life of the chain and of the teeth over which it runs. Fluctuations in  
85 speed and load on one shaft are attenuated before they reach the other shafts. In addition the flexible parts will damp out vibrations and confine them to the part of an apparatus in which they originate.

What we claim is:—

90 1. A chain wheel in which the hub and rim are made separate from one another with the rim wholly surrounding the hub, a rubber ring is bonded to circumferential  
95 surfaces on both of them, and either the hub or the rim or each has a flange covering a face of the ring and extending into contact with the rim or hub as the case

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Index at acceptance :—Class 80(ii), C2f4e.

## COMPLETE SPECIFICATION

### Improvements relating to Chain Wheels or Sprockets

We, THE RENOLD AND COVENTRY CHAIN COMPANY, LIMITED, a British Company, of Renold Works, Didsbury, Manchester, and ONISSIM BURAWOY, a British Subject, of the Company's address, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to chain wheels or sprockets used with transmission chains.

According to the present invention the hub and rim are made separate from one another with the rim wholly surrounding the hub, a rubber ring is bonded to circumferential surfaces on both of them, and either the hub or the rim or each has a flange covering a face of the ring and extending into contact with the rim or hub as the case may be so as to maintain them concentric with one another.

The rubber or the like permits relative rotary displacement of the hub and rim. If the chain wheel is transmitting any considerable power the tension in the chain tends to displace the rim radially relatively to the hub and if this is permitted to occur the chain may run unevenly. The flange or flanges resist this tendency.

Preferably either the hub or rim or both is or are recessed to form an internal annular cavity in the wheel while leaving cylindrical surfaces in running contact with one another at each face, and then the rubber ring lies in the annular cavity and is bonded to the two concentric cylindrical surfaces bounding it.

Examples of chain wheels constructed according to the present invention are shown in the accompanying drawings in which:—

Figures 1 and 2, 3 and 4, and 5 and 6 are radial sections and fragmentary elevations of three different wheels.

In the construction shown in Figures 1 and 2 a narrow rubber ring 12 is used,

bonded to concentric cylindrical surfaces on the hub 14 and rim 16. The rim has a flange 18 which covers one face of the ring 2 and extends into contact with the hub, and the hub has a similar flange 20 extending into contact with the rim, so that relative radial displacement of the hub and rim is prevented.

The construction shown in Figures 3 and 4 closely resembles that of Figures 1 and 2, but in this case both flanges are formed on the rim, as shown at 24. It will be noted that both in this construction and in that shown in Figures 1 and 2 the rubber ring is totally enclosed in an annular cavity formed in Figures 1 and 2 by recessing both the hub and rim and in Figures 3 and 4 by recessing the rim only.

Figures 5 and 6 show a construction in which the hub 36 and rim 38 have wavy opposed surfaces 40 and 42 to which is bonded a rubber ring 44. Relative radial displacement of the hub and rim is prevented by a single deep flange 46.

One or more wheels or sprockets according to the present invention may be used in a set of wheels run over by a single chain. They are of most value on the shafts or the like which are subject to most uneven torque or speed. The flexible parts serve to reduce irregularity in the load transmitted by the chain and so to prolong the life of the chain and of the teeth over which it runs. Fluctuations in speed and load on one shaft are attenuated before they reach the other shafts. In addition the flexible parts will damp out vibrations and confine them to the part of an apparatus in which they originate.

What we claim is:—

1. A chain wheel in which the hub and rim are made separate from one another with the rim wholly surrounding the hub, a rubber ring is bonded to circumferential surfaces on both of them, and either the hub or the rim or each has a flange covering a face of the ring and extending into contact with the rim or hub as the case may be.

may be so as to maintain them concentric with one another.

2. A chain wheel in which the hub and rim are made separate from one another with the rim wholly surrounding the hub and either or both is or are recessed to form an internal annular cavity in the wheel while leaving cylindrical surfaces in running contact with one another at each face, and a rubber ring lies in the annular cavity and is bonded to the two

concentric cylindrical surfaces bounding it.

3. A chain wheel constructed substantially as described with reference to 15 Figures 1 and 2, 3 and 4, or 5 and 6, of the accompanying drawings.

For the Applicants:

GILL, JENNINGS & EVERY,  
Chartered Patent Agents,  
51/52, Chancery Lane, London, W.C.2.

## PROVISIONAL SPECIFICATION

### Improvements relating to Chain Wheels or Sprockets

20 We, THE RENOLD AND COVENTRY CHAIN COMPANY, LIMITED, a British Company, of Renold Works, Didsbury, Manchester, and ONISSIM BURAWOY, a British Subject, of the Company's address, do hereby declare the nature of this invention to be as follows:—

25 This invention relates to chain wheels or sprockets used with transmission chains.

According to the present invention the hub and rim of a chain wheel or sprocket are made separate from one another and connected by one or more flexible parts of rubber or similar material. The rubber or the like may be mechanically connected to the hub and rim, for example by inter-  
35 engagement of small studs or by compression of the rubber to set up great friction. Preferably however they are bonded to surfaces on the hub and rim.

The rubber or the like permits relative rotary displacement of the hub and rim. The tension in a chain transmitting any considerable power may cause some relative radial displacement of the hub and rim as a result of local compression of the rubber or the like. According to a further  
45 feature of the invention this is prevented by making the hub and rim with complementary surfaces which are a running fit and so prevent their relative radial displacement.

50 In the simplest construction a rubber annulus is inserted between and bonded to cylindrical surfaces on the hub and rim respectively.

55 In the preferred construction in which relative radial displacement is prevented, either the hub or the rim is recessed at one face to leave a flange at the opposite face extending nearly into contact with the  
60 other member and the flexible part is housed in the recess and bonded to the two opposed cylindrical surfaces of the hub and rim respectively. Alternatively,

both the hub and the rim may be made with a shoulder and flange at the surface facing the other and the flexible material may be housed between the two overlapping flanges and bonded to them. In this case either flange or both flanges may extend nearly into contact with the  
70 opposite cylindrical surface on the other member so as to provide the running surfaces which prevent radial displacement. Yet again, either the hub or the rim may be formed with teeth, and flexible  
75 elements may lie in the spaces between the teeth and be bonded to the circumferential surfaces of the hub and rim between which they lie. In this case, of course, the tips of the teeth are part-cylindrical  
80 and provide the running surfaces preventing radial displacement.

The amount and kind of flexible material used is determined in each case by the elastic characteristics required. In  
85 the preferred construction a single ring of rubber is used.

One or more wheels or sprockets according to the present invention may be used in a set of wheels run over by a single  
90 chain. They are of most value on the shafts or the like which are subject to most uneven torque or speed. The flexible parts serve to reduce irregularity in the load transmitted by the chain and so to  
95 prolong the life of the chain and of the teeth over which it runs. Fluctuations in speed and load on one shaft are attenuated before they reach the other shafts. In addition the flexible parts will  
100 damp out vibrations and confine them to the part of an apparatus in which they originate.

Dated this 23rd day of December, 1949.

For the Applicants:

GILL, JENNINGS & EVERY,  
Chartered Patent Agents,  
51/52, Chancery Lane, London, W.C.2.

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